Impact Assessment and Project Appraisal, volume 23, number 3, September 2005, pages 170–174, Beech Tree Publishing, 10 Watford Close, Guildford, Surrey GU1 2EP, UK

Editorial

Learning from experience: emerging trends in environmental impact assessment follow-up

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THE HISTORY OF environmental impact assessment (EIA) follow-up is nearly as long as the practice of EIA itself. A large body of work produced in the 1980s was devoted to the topic and this set the scene concerning aims, approaches and techniques for EIA follow-up. A recent upsurge of interest in EIA follow-up has seen it become the topic for a series of workshops at the International Association for Impact Assessment (IAIA) conferences from 1999 to 2005. Many of the findings, deliberations and case studies presented at these workshops and elsewhere have been published in journal articles in recent years. Towards the end of last year we edited a book devoted to EIA and strategic environmental assessment (SEA) follow-up practice, drawing on experiences from around the world (Morrison-Saunders and Arts, 2004). A review of this book by Dr Alan Bond (University of East Anglia) is included in the Book Reviews section of this volume.

Having produced this book, we did not think that there was much more to say on the topic. However, a series of papers presented at the 2003[1] and 2004[2] IAIA conferences demonstrated an emerging interest and expertise in follow-up in socio-economic matters in particular, as well as further innovations in follow-up of 'traditional' project biophysical impacts to include cumulative and health impacts and fledgling conceptualisations of what SEA follow-up might entail. This kindled our interest in editing a special edition of *Impact Assessment and Project Appraisal* (*IAPA*) devoted to follow-up, which would explore the latest developments in the field.

The world-wide practice of EIA and follow-up is reflected in this special issue, which includes practitioner contributions from Australia, Brazil, Canada, Finland, The Netherlands, Portugal, South Africa and the United Kingdom. The articles in this volume are presented in a sequence that approximately mirrors the evolution of thinking and expertise in the field. In introducing the articles, we summarise some of the key lessons learned from the collective body of wisdom presented and offer some perspectives on future new directions for EIA follow-up, including the notion of follow-up for sustainability assurance. Firstly, though, it is appropriate to take stock of the current state of play and this is the purpose of the first article in the volume.

Establishing principles

The opening article (by Marshall *et al*) presents international best practice principles for EIA follow-up based on collective learning from experience to date. As such it is not a research paper, but pulls together key aspects of EIA follow-up shared and reviewed by practitioners participating in recent IAIA conferences. In this way, it serves a similar role to the social

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impact assessment (SIA) best practice principles (Vanclay, 2003) that acted as a precursor to two special editions of *IAPA* devoted to SIA (Burdge, 2003). The principles are presented here to guide future development of EIA follow-up practice, but are also intended to be revised and updated as appropriate in response to further advances and experience.

Emerging trends in follow-up

The recent calls for greater attention to SIA combined with the emergence of SEA and moves towards 'sustainability assessment' have increasingly seen more emphasis on social and economic issues in impact assessment practice. This special edition reflects this trend, which is also apparent with respect to follow-up, with five articles having a socio-economic focus and the final article in the volume exploring the concept of SEA follow-up. However, like the emergence of EIA itself, the starting point for this volume has a biophysical emphasis.

To date, the practice of EIA follow-up has predominantly focused on the biophysical impacts of individual developments at the project level. The articles by Sánchez and Gallardo and by Marshall present examples of such approaches to follow-up that have achieved proactive and effective environmental management, based on case studies from Brazil and the United Kingdom respectively. These case studies reiterate a key purpose of EIA follow-up, that is, to ensure that project management occurs effectively with minimum adverse environmental effects.

A variety of approaches is discussed including self-regulation by proponents, subcontracting of follow-up work to consultants, involvement of the public, and government inspection and enforcement. Linking up with environmental management systems such as ISO 14001 is a central element in both articles. Most importantly, they demonstrate that the costs of follow-up are more than justified by the environmental gains that can be made and the overall advantage to proponents of instigating EIA follow-up with respect to public support and image.

Whilst expertise in EIA follow-up has been growing, most activity seems to take place at the proponent and regulator level. However, there is increasing interest in communicating the findings of EIA follow-up to the general public effectively and, perhaps more importantly, in actively engaging community stakeholders and the affected public in EIA follow-up programmes directly. The next two articles (by Slinger *et al* and Lawe and Wells) emphasise the value gained from involving the community in follow-up.

The former demonstrates how public pressure and local knowledge played an important role in achieving better environmental management outcomes for a dam project in South Africa, including adaptation of management plans and facilitation of learning. The latter article explains how a community based monitoring programme in Canada is being used to evaluate the cumulative effects of multiple oil-sands extraction projects. Both cases stress the relevance of follow-up and of public involvement for building trust and credibility as well as for improved project and environmental management.

Socio-economic monitoring in follow-up is the focus of the subsequent two articles. Storey and Noble challenge EIA practitioners to approach the monitoring of socio-economic effects in the same way that biophysical effects have traditionally been addressed, using an offshore oil and gas development in Canada to demonstrate how this can be achieved. They argue that there is a need for more attention and rigour in monitoring and assessment of socio-economic effects in both the pre-decision and follow-up stages.

Glasson documents in detail some of the techniques that can be utilised in socio-economic monitoring using the results of a nuclear power station project in the United Kingdom. Of particular interest is the wide range of socio-economic issues that have been evaluated in this case, such as employment, expenditure, worker accommodation, health, education, crime, local perceptions and public opinion.

An important lesson from these two articles is that often much socio-economic data already exists or is already routinely collected, especially by local authorities and other government agencies, and that effective SIA follow-up can be accomplished at little or no cost simply by tapping into these sources. This emphasises the importance and value of co-operative partnerships between proponents of development, government regulatory agencies and other stakeholders for effective EIA follow-up.

The subsequent articles deal with socio-economic issues in a broader context. Lima and Marques present a novel methodology that has been employed effectively in Portugal to determine the psychosocial effects of a solid waste incinerator focusing on risk perception and annoyance to residents. This is a method grounded in sound science, but dependent on involvement of the local community to be effective.

In a similar fashion to the previous three articles, Petäjäjärvi explains how socio-economic aspects of bridge construction to an island in Finland were accounted for using simple but robust indicators and by utilising readily available data. The final article on this topic, by Lavallee and André, explains how 25 years of experience with social impact follow-up in Quebec, Canada is being compiled into a useful database available on the internet (www.aqei.qc.ca/sefaenglish.html) to maximise learning from experience for future EIAs in the province and elsewhere.

The collective lessons learned from the suite of articles exploring this emerging interest in follow-up of socio-economic effects in EIA are that:

- more attention should be given to socio-economic issues in both the pre-decision and follow-up stages;

- the range of socio-economic considerations should include broader concerns beyond the obvious and direct project-level impacts such as pollution and nuisance. Other dimensions of community health, such as lifestyle and well-being, should be considered as well as regional-scale issues and cumulative effects;
- socio-economic effects monitoring should be less superficial and more rigorous than is currently the case, but this can often be achieved with little effort by utilising existing sources of data; and
- socio-economic follow-up may enhance public tolerance and support of projects, as well as building trust and credibility among all stakeholders in the EIA process.

The final article in this volume, by Partidário and Arts, explains some of the unique features associated with SEA follow-up and how these might best be addressed. It is clear that, unlike project based EIA follow-up, there can be no easily prescribed 'correct' way to approach SEA follow-up. To deal with the complexity of strategic decision-making and planning, a multi-track approach is proposed. This draws on five established monitoring and evaluation approaches that can be combined or blended to achieve tailor-made and useful follow-up that suits a particular SEA context.

SEA follow-up is considered to be basically about managing the policy and planning implementation process. Given the newness of the field, the key lesson here is to 'just do it' and to adopt a 'learning-by-doing' attitude. As experience with SEA and its follow-up is gained, perhaps some guiding principles for best practice SEA follow-up can be developed.

Socio-economic and biophysical follow-up

How does SIA, or socio-economic, follow-up compare with traditional approaches to EIA follow-up with a biophysical focus? Previously we defined EIA follow-up as comprising four elements: monitoring; evaluation; management; and communication (Arts *et al*, 2001). There seems to be a difference in perceived importance of these elements for biophysical follow-up compared to socio-economic follow-up. Overall, however, we would argue that the emphasis of any EIA follow-up must be on achieving sound management outcomes, thus this element comes to the fore for both biophysical and socio-economic follow-up.

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For biophysical follow-up, to achieve effective environmental management, monitoring is an essential activity. Without monitoring it is not possible to know what impacts have occurred and thus where further mitigation and management activity is needed. Evaluation is the middle step between monitoring and management (that is, it is the interpretation of monitoring data). Monitoring and evaluation often use extensive (baseline) data sources and quantitative, (fairly) rigorous methods and well-developed techniques. The emphasis is on determining 'measured change' and documenting cause-and-effect relationships. A serious pitfall to such follow-up may be too much detail and information overload, which results in unnecessary cost 'blow-outs'.

Over the years, the focus of EIA follow-up has shifted from monitoring and evaluating the accuracy of (biophysical) impact predictions towards linking up with environmental management and more recently communication about environmental performance with stakeholders (Figure 1). With respect to the follow-up of biophysical issues, the active involvement and participation of (local) communities tends still to be rather limited. Communication seems to be viewed as important in terms of informing stakeholders about results, but overall has been given a lower priority than monitoring and management activities. Perhaps this does not really matter; as long as the environment is being managed appropriately, a good outcome is being achieved in terms of environmental protection. The shift in focus in biophysical follow-up can be depicted as a movement from left to right in Figure 1, as indicated at the base of the diagram.

Follow-up of socio-economic issues, however, seems to have developed from the opposite direction, starting with a focus on communication (moving from right to left in Figure 1). With respect to socio-economic issues, monitoring and evaluation are lagging behind. In pre-decision EIA documents, socio-economic issues receive less attention (Burdge, 2003) and they are often described as desired effects rather than rigorously predicted impacts.

Post-decision monitoring and evaluation related to socio-economic effects appear to be relatively rare and poorly developed. Often rough, qualitative methods are used, employing (reactive) tools such as registration of complaints. Communication in follow-up often seems to focus on the promised effects of a project with the aim of gaining public support; it ends up being much more about 'desired change' and marketing of the project.

The role of communication in socio-economic follow-up is also important, since socio-economic effects monitoring and evaluation may strongly relate

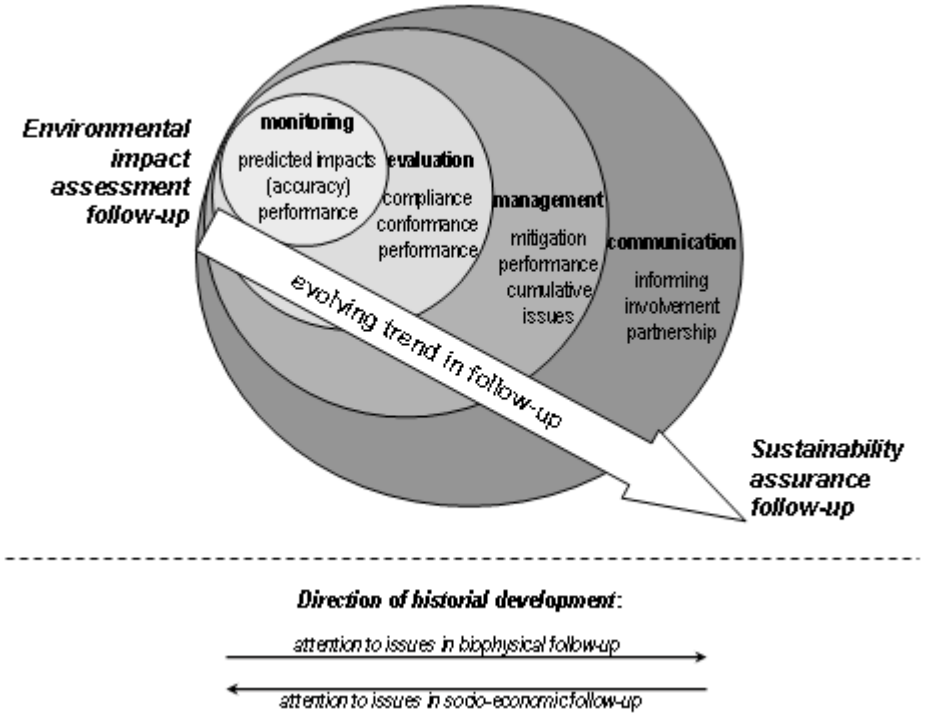

Figure 1. Evolving trends in EIA follow-up (and attention to follow-up elements in bio-physical and socio-economic follow-up)

to perceived effects and the public's opinions about the project and its impact. Additionally, communication strategies may play a role in the management of impacts (for instance, raising awareness about positive or negative issues). The communication element of EIA follow-up offers a spectrum of possibilities for engagement, ranging from informing and consulting, to interactive involvement, extending through to full partnership (after Arnstein (1969), cited in Woltjer (2004)).

Communication in socio-economic follow-up at the 'higher' end of this spectrum starts to serve as an agent for monitoring, evaluation (for instance, through public involvement) and management elements (for instance, through partnerships with the community) in its own right. Consequently, central issues in socio-economic follow-up relate not only to measuring, conformance and performance (as is also the case for biophysical follow-up) but importantly also to openness, trust and credibility.

It could be argued that, with socio-economic follow-up, the priorities change somewhat. Management remains a most pressing concern but, because of the interest in effects on people, communication and involvement of the community becomes a higher priority than seems to be the case with biophysical follow-up. For socio-economic follow-up, monitoring (at least as a 'formal scientific' undertaking as commonly seen in ecological monitoring programmes) seems less important since the affected community can report on impacts on themselves. In a sense, any socio-economic 'monitoring' can be seen as an extension of the 'communication' process, so communication has a high priority (as implied in Figure 1).

Future challenges

What, then, are the future challenges and directions for follow-up practice in impact assessment? The techniques and framework of biophysical follow-up are well established (see, for instance, Baker, 2004). However, practice of EIA follow-up still leaves much room for improvement. In many jurisdictions, little, if any, follow-up is done, or it is not provided for in a rigorous or structured manner. In this respect, it is indicative (and worrying) that many of the cases of EIA follow-up presented in the international literature relate mainly to large projects in (typically) highly-valued, vulnerable environments. There is a need for more consistent application of follow-up; after all, it could be argued that, wherever there is a need for EIA to guide decision-making, some consideration of follow-up needs is also warranted.

Other key areas for improvement relate to:

- better scoping of follow-up programmes and more inclusive EIA follow-up (for instance, socio-economic, health, cumulative impacts);
- the application of more rigorous but practicable methods and techniques;
- more proactive remedial management action that blends into regular modes of operation;
- better involvement of local communities and communal knowledge; and
- better documentation and reporting of findings to enhance learning from experience from one project to the next and from one proponent to another.

The emerging practice of socio-economic follow-up leads to considerations and involvement of other

parties beyond the immediate project boundaries and the activities of an individual proponent. Similarly, the concept of SEA follow-up requires thinking and action beyond the immediate mandate of traditional project proponents. This may raise new issues concerning the division of roles and tasks, responsibilities, funding of follow-up studies and responsibility for remedial management action.

Thus, an important area for future development is the development of co-operative partnerships not only actively involving the community, but also the full range of government agencies (that is, beyond the mandate of the immediate EIA regulator) with an interest in impact assessment outcomes whether biophysical, socio-economic or strategic in nature. If such partnerships are already operating, then some reporting and feedback on successful approaches would be valuable. With the involvement of more players and diverse sources of information beyond the boundaries of individual projects, a key challenge is to monitor rigorously and account for cause–effect pathways.

The evolution of EIA follow-up beyond discrete projects and with a biophysical focus, through to socio-economic and SEA follow-up paves the way to think even further about extending the follow-up concept to sustainability assurance — something that is yet to be undertaken in practice (but is an important goal as indicated in Figure 1). Initial explorations of this aspect were a topic for discussion at the 2005 IAIA[3] conference (for instance, the theme forum: 'IA follow-up: achieving sustainable outcomes' and the closing plenary session) and have been reported on by Sadler (2004) and Hunsberger *et al* (2005).

The practice of biophysical follow-up is now well-established, and the articles in this special issue show that socio-economic issues also can be effectively followed up. Thus it may now be possible to determine from follow-up activities whether the total environment has been protected or not in an acceptable manner with respect to EIA and SEA proposals. The next challenge is to determine whether this can be considered to be sustainable or not. Measuring sustainability may require new approaches to impact assessment follow-up that are not yet fully clear; it thus provides an ongoing challenge to us all.

Notes

1. IAIA'03 Impact Assessment and Capacity Building, 23rd annual meeting of the International Association for Impact Assessment, 14–20 June, Marrakech, Morocco, available at <www.iaia.org/Non_Members/Conference/conference.htm>.
2. IAIA'04 Impact Assessment for Industrial Development Whose Business Is It?, 24th annual meeting of the International Association for Impact Assessment, 24–30 April 2004, Vancouver, Canada, available at <www.iaia.org/Non_Members/Conference/IAIA04/IAIA04_CDROM.htm>.
3. IAIA'05 Ethics and Quality, 25th Annual Conference of the International Association for Impact Assessment, 31 May–3 June 2005, Hyatt Regency Cambridge, Boston, USA, available at <www.iaia.org/Non_Members/Conference/IAIA05/IAIA05%20Main%20Page.htm>.

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Referees

These are the referees used for this special issue of *Impact Assessment and Project Appraisal*. The Guest Editors greatly appreciate, and thank them for, their help.

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